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ABSTRACT

A study was conducted to determine the effects of word processing on the correctness of student writing. Student papers produced on the word processor were compared with those produced without the word processor in two classes of freshman English--an experimental and a control. The teacher attempted to keep the teaching methods and curriculum in both experimental and control sections as nearly the same as possible, with the exception that students in the experimental class used the word processor in the production of their writing assignments, including proofreading and stylistic programs available at the computer center as needed. The results indicated that the experimental and control groups were very nearly alike in all of the correctness features analyzed except spelling, which could be accounted for by the experimental group's access to a spelling checker. These results suggest that the errors students make in hand-written papers are the same errors they make in computer-produced papers. (EL)

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A STUDY OF THE EFFECTS OF WORD PROCESSING ON THE CORRECTNESS OF STUDENT WRITING

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CS 209 203

A STUDY OF THE EFFECTS OF WORD PROCESSING ON THE CORRECTNESS OF STUDENT WRITING

When the computer-age Eves of technology first tempted innocent residents of the Garden of English with shiny new Apples, many eagerly assumed that computers would lead to the "tree of knowledge." I overheard a colleague in the hall one day exclaiming that if we would only "computerize" freshman English, all our hours of laborious paper-grading would end. This optimism is rampant in the discipline today. However, the assumption that computers in general, and word processing in particular, will relieve teachers of the onerous task of paper-grading is simply that, an unwarranted assumption. Claims have been made for the benefits of computers in composition, but no comprehensive study has yet shown that computers in composition instruction improve writing quality. It is crucial that we understand just how computers can, and can't, help student writers before we partake of that computer fruit.

Of special interest to teachers of writing are word processing programs. Recently, writing teachers and researchers have begun to speculate on how word processing can benefit student writers. Yet, our knowledge of how word processing programs modify the way students write is slim at best. Existing studies, limited in scope, suggest that word processing may improve the writing of inexperienced writers. For example, a recent study using only four students, concluded that "the computer can be a

substantial benefit for beginning writers."[1] A similar study, better designed but again using few students, posited that "the use of the computer-based text editors would significantly expand the number and the complexity of the operations used by inexperienced writers when revising."[2] However, a review of the recent literature suggests that little research has been done to substantiate such claims. Currently, there are a few more extensive studies in progress, such as the tests of Bell Laboratories' software at Colorado State University and the research on computers and writing at the University of Minnesota.[3] But these studies, broad in definition and scope, do not provide any evidence for the assumption that using word processing in composition instruction will necessarily improve the quality of student writing.

When my colleague referred to "computerizing composition," I'm quite sure he was reacting to the tedium of "correcting" endless grammatical and usage problems he saw in student writing. He hoped that the computer would "correct" the papers before they ever crossed his desk. Necessarily, a part of our judgment of quality in student writing is influenced by the student's adherence to correct standards of grammar and usage. Much as we would like to think we are reading for the student's meaning in his or her writing, we are also reading for the student's adherence to standard written English. My colleague seemed to think that computers would in and of themselves make student writing more correct. In order to test this hypothesis, I

designed a study to determine the effects of word processing on the correctness of student writing.

To begin, I reviewed the recent literature on computers and composition instruction and discovered only two articles which addressed directly the issue of correctness in student writing: William Oates' article "An Evaluation of Computer-Assisted Instruction for English Grammar Review," and Kathleen Kiefer and Charles Smith's article alluded to earlier, "Textual Analysis with Computers: Tests of Bell Laboratories' Computer Software."[4] Oates' study involved a pre-test and post-test of students using computer assisted instruction (CAI) for grammar review, but students in his study did not use word processing. Oates found that the CAI section showed more gains on a grammar test given at the beginning and the end of the semester than the non-CAI section. As he states in his conclusion, "the CAI section had more attention to grammar and learned more grammar."[5]

Oates makes no attempt to correlate the gains on the grammar test with improved quality in student writing. I think it hardly surprising that if you teach students more grammar, they learn more grammar. Though I have no quarrel with Oates' conclusion that "there is little doubt that CAI is an effective way of providing basic grammar review to beginning writing students," I do disagree with his fundamental assumption that such a review is important, or even connected, to the grammatical correctness of the students' writing. Many composition studies over the last twenty years show such an assumption to be tenuous.

Keifer and Smith's study of Bell Laboratories' software, (computer programs designed to help students edit their work) was more ambitious than Oates' study. The students in the study typed last drafts of their writing assignments into a computer. Using the text editing programs in the Writer's Workbench series, students in the experimental sections ran a spelling program and other text analysis programs, including Diction, Suggest, and Style. Like Oates, Keifer and Smith used a pre-test/post-test research design. Students took an editing quiz in which they were to identify errors in grammar, mechanics, and punctuation. Students in both their experimental and control groups improved on the editing quiz, with the experimental group identifying "significantly more errors" on the grammar quiz than the control group.[6] Again, I hardly think this is surprising. The experimental group spent a great deal more time with editing than the control group, by virtue of the editing programs used on the computer. However, a holistic scoring of the actual writing of these two groups failed to distinguish one group's essays as better in "quality" than the other group's essays. The researchers were looking specifically for writing "fluency," but stated that "we can conclude nothing about the effect of DICTION, SUGGEST, and STYLE on overall fluency."[7]

The two studies described above do not tell us much about actual student work produced with the aid of word processing. For my study, rather than using an editing test as a measure of student editing skill, I analyzed the correctness of written

papers produced by students using word processing as compared to those produced without word processing. In this way, I could determine whether or not the correctness of the student writing improved through the use of word processing. Subjects in the study were randomly placed through computerized registration into sections of freshman English at Texas Tech University. An experimental (computer-assisted) and a control section of freshman English, both taught by an experienced teaching assistant, were designated to participate in the study.[8] Students in the experimental section were given the option of transferring to another section, though none chose that option. The experimental and control sections were matched for SAT verbal scores with the average SAT verbal for the experimental group being 366 and the average SAT verbal score for the control group being 370 (based on all available scores).

Students in the experimental section used Texas Tech's Microlab for computer assistance with their papers. The Microlab is available to any student enrolled in an English class and contains seven DEC Rainbow 100 microcomputers plus relevant software. Students were taught word processing through the lab user's guide, but were not given explicit instruction in word processing in class. Also available to students using the Microlab are a proofreading program (including a spelling checker), a stylistic analysis program that analyzes features such as vagueness and excessive use of prepositions, and a comment program which interprets the statistical data from the analysis

program for the student. The teacher attempted to keep the teaching method and curriculum in both experimental and control sections as nearly the same as possible, with the exception that students in the experimental class used word processing in the production of their writing assignments and used proofreading and stylistic analysis programs at their own discretion.

At the end of the semester, I analyzed the last papers produced by both the experimental and control groups, their sixth writing assignment. These thirty papers were analyzed for thirteen features of correctness: 1. Sentence Fragment, 2. Run-on Sentence/Comma splice, 3. Faulty Verb Tense, 4. Faulty Subject-Verb Agreement, 5. Faulty Modification, 6. Faulty Use of Pronoun, 7. Faulty Use of Possessive, 8. Faulty Use of Comparative and Superlative, 9. Faulty Use of Parallelism, 10. Spelling Errors, 11. Capitalization Errors, 12. Punctuation Errors (other than 1 and 2 above), and 13. Wrong Words.[9] Four of the thirteen features occurred too infrequently in the sample to warrant inclusion in the study: faulty verb tense, faulty use of pronoun, faulty use of comparative and superlative, and capitalization errors. To facilitate comparisions between the two groups, the sample itself was narrowed to the ten essays from the experimental group and the ten essays from the control group that were most nearly the same length: the twenty papers analyzed averaged 629 words or 31 sentences in length.

Table 1

As can be seen on Table 1, the experimental and control groups were very nearly alike in all of the correctness features analyzed except spelling: 42 spelling errors in the control group compared to 7 errors in the experimental group. This difference is to be expected since the experimental group had access to a spelling checker. The experimental group had fewer editing errors for each feature except punctuation and wrong word use. However, these differences could be accounted for by the ease of proofreading that results from a printed copy as compared to a hand-written copy. Furthermore, when comparing the total occurrence of editing errors other than spelling, the two groups were very similar: 87 errors for the control group, 83 errors for the experimental group (2.8 and 2.7 errors/sentence respectively). Though I have not conducted a statistical analysis of the data, it seems from the results of my preliminary descriptive study that the use of word processing in and of itself does not produce writing which is more correct.

Some students using computers for word processing find the computers fun and different. A positive attitude toward computers by many, but by no means all, students has been noted by several researchers. For students who like to work with computers, who are notoriously poor spellers, or who wish to reduce the rote copying work necessitated by hand-writing papers, computers are fine. In my own work, I find that the retyping time saved by using a computer is invaluable, and I like to provide all my students with the option of using our Microlab should they so

desire. But, we should be careful not to be seduced by a bite of the Apple. It is not fair to assume that student writers will necessarily improve their writing simply by using computers for word processing. My study suggests that the grammatical and usage errors made by students do not magically disappear when they use computers. Rather, it seems that, with the exception of spelling, the errors students make in hand-written papers are the same errors they make in computer-produced papers. As computer programs are written that provide good, interactive, writing instruction, maybe we will see the positive effects of such instruction on our students' writing. For now, let's not computerize freshman English.

TABLE 1

OCCURRENCE OF EDITING ERRORS

IN STUDENT ESSAYS

Type of Error	Total # of Occurrences In Sample		Average # of Occurrences Per Paper		Average # of Occurrences Per Sentence	
	Control (t=10)	Exper (t=10)	Control (t=10)	Exper (t=10)	Control (t=31)	Exper (t=31)
Sentence Fragment	6	4	.6	.4	.19	.13
Run-on/Comma Splice	6	5	.6	.5	.19	.16
S/V Agreement	12	10	1.2	1.0	.39	.32
Modification	8	5	.8	.5	.26	.16
Possession	6	5	.6	.5	.19	.16
Parallel Structure	5	1	.5	.1	.16	.03
Spelling	42	7	4.2	.7	1.40	.22
Punctuation	18	20	1.8	2.0	.58	.64
Wrong Word	26	33	2.6	3.3	.84	1.06
TOTAL	129	90	12.9	9.0	4.16	2.90
TOTAL without Spelling	87	83	8.7	8.3	2.80	2.67

NOTES

[1] John C. Bean, "Computerized Word-Processing as an Aid to Revision," College Composition and Communication, 34, No. 2 (May 1983), 147.

[2] Richard M. Collier, "The Word Processor and Revision Strategies," College Composition and Communication, 34, No. 2 (May 1983), 150.

[3] Lillian S. Bridwell, Paula Reed Nancarrow, and Donald Ross, "The Writing Process and the Writing Machine: Current Research on Word Processors Relevant to the Teaching of Composition," in New Directions in Composition Research, ed. Richard Beach and Lillian Bridwell (New York: The Guilford Press, 1984), 381-398; Kathleen E. Kiefer and Charles R. Smith, "Textual Analysis with Computers: Tests of Bell Laboratories' Computer Software," Research in the Teaching of English, 17, No. 3 (October 1983), 201-214.

[4] William Oates, "An Evaluation of Computer-Assisted Instruction for English Grammar Review," Studies in Language Learning, 3 (1981), 193-200; Keifer and Smith (see note 3). [5] Oates, p. 195.

[6] Keifer and Smith, p. 206.

[7] Keifer and Smith, p. 208.

[8] I am grateful to William Welter, graduate teaching assistant at Texas Tech University, who taught the courses used in this study and who helped in the data analysis.

[9] For my data analysis, I used the taxonomy of common errors

described by Jo-Ann M. Sipple in her book Teaching Writing: Making Theory Practice Connections (Columbus, Oh.: Charles E. Merrill, Co., 1984), Appendix A.